AD-A283 020

Logistics Management Institute

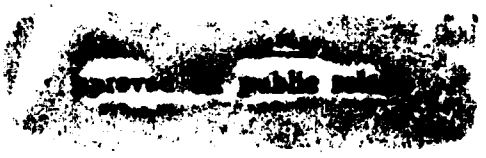
A Survey of Construction Management Costs in 1993

CE309RD1

DTIC
ELECTE
AUG 1 0 1994
S G D

Jordan W. Cassell
Jeffrey A. Hawkins

94-25148



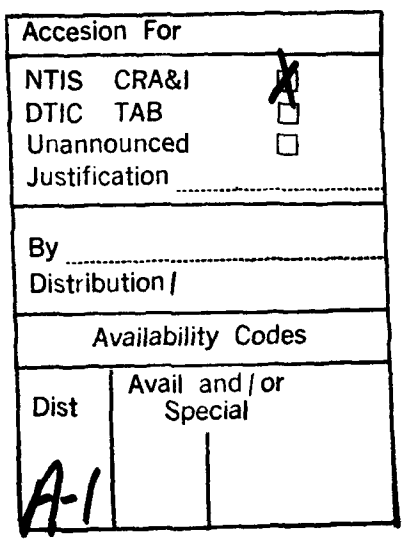
LMI

94 8 09 054

March 1994

A Survey of Construction Management Costs in 1993

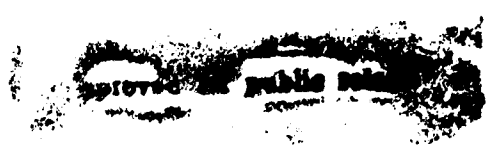
CE309RD1



Jordan W. Cassell
Jeffrey A. Hawkins

Prepared pursuant to U.S. Army Corps of Engineers Contract DACW31-90-D-0076. The views expressed here are those of the Logistics Management Institute at the time of issue but not necessarily those of the U.S. Army Corps of Engineers. Permission to quote or reproduce any part except for government purposes must be obtained from the Logistics Management Institute.

Logistics Management Institute
6400 Goldsboro Road
Bethesda, Maryland 20817-5886



Contents

Tables

Figures

A Survey of Construction Management Costs in 1993

INTRODUCTION

This report presents the results of the third construction management (CM) cost survey conducted by the Logistics Management Institute in cooperation with the Construction Management Association of America (CMAA). This year's survey was designed so that its findings and conclusions can stand on their own as well as be compared with those of the first and second surveys conducted in 1988 and 1989, respectively. The value of this survey continues to depend on the completeness and accuracy of the data received from the participants.

In this introduction, we describe the survey design and then discuss the overall survey responses. The remainder of the report is divided into analyses of general company data, direct and indirect cost data, and individual project data. Finally, we provide an appendix with detailed survey results covering cost management fees and services for 16 construction categories.

Survey Design

In the first part, we present general information about the participating companies (i.e., company size, type of company, annual revenues, client base, and average number of CM projects completed per year). That information is then used to provide a simple comparison – by types of companies participating in the survey – between the project cost data for different types and sizes of companies that provide CM services. This CM cost survey also provides an additional breakdown of CM projects and their revenues by "fee only" and "at risk."

The second part of the survey entails an analysis of direct costs, overhead costs, and operating income. The questions were designed so that most companies could respond easily by using the most recent data from their accounting records.

The survey's third part asks for specific data on recently completed CM projects. Respondents were asked to indicate the type of construction project for which CM services were provided (from a list included in the instructions), identify the project's location, provide the scope of the project (renovation or new construction), give the type of CM contract (owner's agent or guaranteed maximum price), and give the value of the CM fee and of the construction contract. They were also asked to list the services offered to their clients in fulfilling

contractual obligations. The information gathered from this section of the survey was used to calculate the CM fee as a percentage of the construction contract.

Survey Responses

This year's survey was sent out in October 1993 to 190 CMAA members (compared to 179 in 1989) performing CM functions and elicited 16 responses. Table 1 summarizes the total response information. A follow-up mailing sent out in November 1993 generated 24 additional responses. The number of companies providing valid survey responses increased from 29 to 35. Although the company response rate was higher this year, those participating provided slightly fewer valid project responses than did those in the 1989 survey (187 versus 196). Construction management costs and other survey results, of course, are strongly influenced by the number, type, size, and location of the participating companies. We did not attempt to correct for these differences.

Table 1.
Summary of Valid Survey Responses

	Number of respones	
	1993	1989
Companies mailed surveys	190	179
Valid company responses	35	29
Valid project responses	187	196

GENERAL COMPANY DATA

Figure 1 shows the distribution of valid company responses, classified by the company's predominant type of work. Participants were asked to mark the category best representing their predominant type of work. As with the 1989 survey, a plurality of respondents (57 percent) classified themselves as pure CM companies. Others classified themselves as a combination of CM and general contractor (GC) (20 percent) or CM/architect-engineer (A-E) (23 percent). This result closely parallels CMAA's corporate membership distribution by company type.

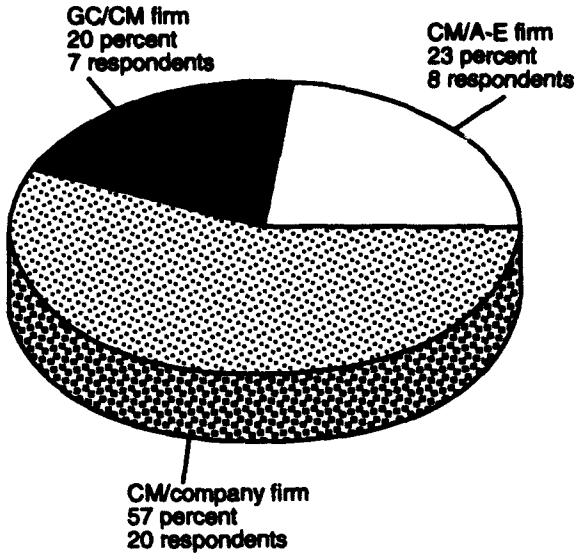
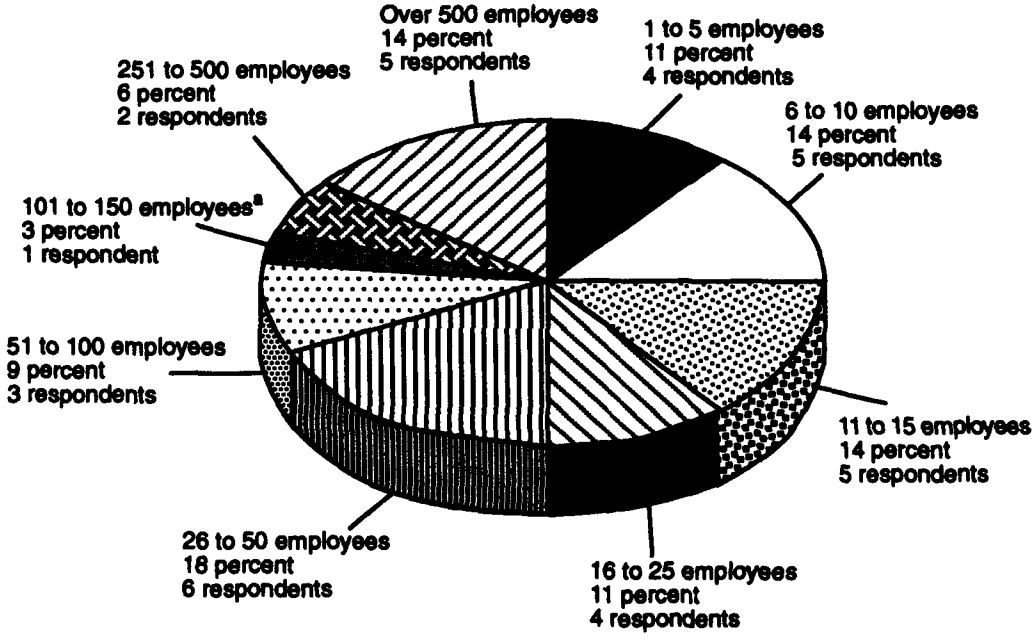


Figure 1.
Distribution by Type of Company

Figure 2 shows the distribution of the valid responses by total staff size. Companies were asked to give full-time equivalents for their part-time and consultant staffs. Most of the responses were from smaller CM companies, with 68 percent reporting 50 or fewer employees. That distribution is similar to the one for the 1989 survey.



*No responses were received in the 151 – 250 employee range.

Figure 2.
Distribution by Company Size

The distribution by clientele is shown in Figure 3. Companies were classified as having either private-sector or government clientele if they indicated that at least 75 percent of their contracts came from either of those sources alone; otherwise, they were said to be mixed. The number of participants reporting most of their work was performed for government clients grew significantly from 38 percent to 49 percent.

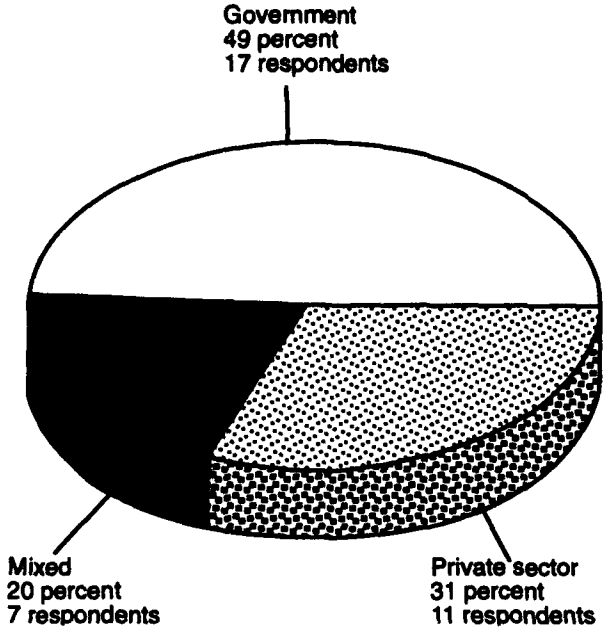


Figure 3.
Distribution by Predominant Clientele

Table 2 summarizes company data on fees charged by CM companies, CM companies' customers, and the percentage of government and private-sector contracts. The "negotiated fixed fee" contract was the most popular type of fee structure, with the "time spent" contract the second most popular type. Table 2 also shows that most private-sector CM work is for educational/institutional, corporate/industrial, corporate/administrative/commercial, health care providers, and commercial developers. A major increase occurred in the relative number of educational/institutional customers who received CM services in 1993 over those who received similar services in 1989, while the relative number of housing/lodging customers declined significantly. The growth in the public-sector projects occurred most in the state and local government category.

Table 2.
General Company Data

	Mean[a]
Types of fees charged by participants	
Negotiated fixed fee	33%
Lump-sum bid	15
Cost-plus fixed fee	11
Time spent (with maximum or time and materials)	21
Percentage of construction contract	14
Other	5
Types of customers	
Health care providers	9%
Corporate/industrial	13
Housing/lodging	4
Commercial developers	6
Corporate/administrative/commercial	11
Educational/institutional	21
Private religious/cultural	4
State and local government	
Environmental Protection Agency	6
Transportation departments	22
Department of Defense	2
Other Federal	2
Types of clientele	
Government clients	57%
Private-sector clients	43

Note: Percentages may not add to 100 percent because of rounding.
[a]Represents the average (mean) of all responses that were presented as percentages.

DIRECT AND INDIRECT COST DATA

The summary of direct and indirect costs as a percentage of total CM revenues is presented in Table 3. The median, 25th percentile, and 75th percentile are shown for all the valid responses. The data are analyzed by size and type of company.

The results in Table 3 simply show how the industry is allocating direct and indirect CM costs. They are by no means intended as *guidance* for that purpose. As can be expected, the way each company allocated its costs varied widely, as it

did in 1989. However, the median responses from this year's participants indicate they tend to allocate about 39 percent of their costs to direct labor, about 23 percent to general and administrative (G&A) expenses and labor, about 11 percent to payroll burden, and about 6 percent to nonlabor direct expenses. Since accounting practices are so varied among the participants, it is difficult to draw conclusions from these results. However, if these results are compared with the project cost data and level of services provided, it appears that CM costs increased slightly while the amount of services provided also increased. Payroll burden as a percentage of CM revenue shows a 1 percent increase over 1989. That change is believed to be due in part to salary and benefits, which have increased more rapidly than construction and other costs. This year, as in 1989, we asked for annual operating income as a percentage of CM revenues. The median is 10 percent, with wide variation by the size or type of company.

Table 3.
Summary of Direct and Indirect CM Costs (As Percent of CM Revenues)

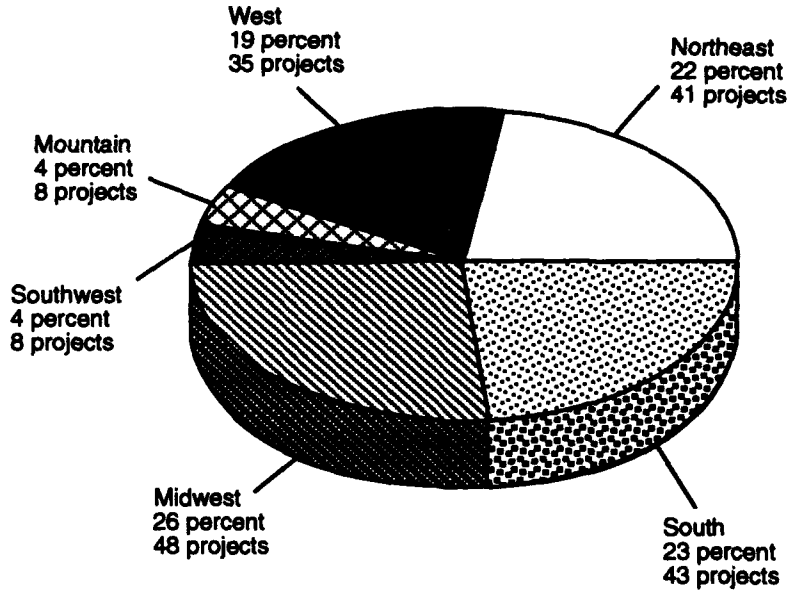
	Number of participants	Direct labor expenses			Payroll burden			G&A labor expenses		
		25th	Median	75th	25th	Median	75th	25th	Median	75th
Overall	35	18%	39%	45%	8%	11%	16%	5%	13%	20%
Size of company (number of employees)										
1 – 15	15	25	45	60	10	13	20	2	11	20
Over 15	20	12	33	41	8	11	13	5	16	20
Type of company										
CM firm	21	20	41	55	8	10	19	3	12	20
GC/CM firm	6	5	10	36	3	11	45	5	7	34
AE/CM firm	8	28	40	41	11	12	14	10	16	28

	Number of participants	G&A nonlabor expenses			Nonlabor direct expenses			Annual operating income		
		25th	Median	75th	25th	Median	75th	25th	Median	75th
Overall	35	5%	10%	22%	3%	6%	11%	3%	10%	85%
Size of company (number of employees)										
1 – 15	15	5	5	13	2	5	9	4	46	100
Over 15	20	7	19	24	3	8	13	3	8	60
Type of company										
CM firm	21	4	10	20	3	6	9	4	65	100
GC/CM firm	6	6	8	39	2	8	85	1	4	10
AE/CM firm	8	8	19	31	4	7	11	2	7	44

INDIVIDUAL PROJECT DATA

In the last part of the survey, participants were asked to submit information on as many as 12 individual projects for which their companies had performed CM services. The survey asked for type of construction project, project location, scope of the project (new construction or renovation), type of contract (CM as owner's agent, or CM provides guaranteed maximum price), the basis for internally estimating the CM contract value, and the value of both the CM and construction contracts.

Figure 4 shows the distribution of the 183 projects for which the geographic location of the construction site was reported. (Note: 4 projects did not identify geographic location.) The information from this survey indicates that CMAA members are performing most of their CM work in the Northeast, South, Midwest, and West. That finding is consistent with the findings of the 1989 survey. Once again, these results are strongly a function of which CM companies participated and should not be interpreted as a major industry trend. However, the places where the projects were managed are important, since geographic location affects the cost of services provided.



Breakdown of geographic regions by states

Region	States
Northeast	CT, DE, MA, MD, ME, NH, NJ, PA, RI, VT
South	AL, AR, DC, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV
Midwest	IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI
Southwest	AZ, NM, OK, TX
Mountain	CO, ID, MT, NV, WY, UT
West	AK, CA, HI, OR, WA

Figure 4.
Distribution of Projects by Geographic Region

Table 4 shows the distribution of the 187 valid project responses by project type. It indicates specific types of construction projects the participants reported in the survey and shows the sources of data used in the project summaries.

Table 4.
Distribution of Valid Responses by Project Type

Category and type	Number of projects	Percentage of total
Health care providers	19	10.2
(01) Hospitals	6	3.2
(03) Clinics/outpatient facilities	8	4.3
(04) Medical offices	1	0.5
(05) Extended care/nursing homes	4	2.1
Corporate/industrial	17	9.1
(06) Warehouse/distribution centers	4	2.1
(07) Light industrial	3	1.6
(08) Process plants/heavy industrial	10	5.3
Housing/lodging	17	9.1
(09) Hotels (high-rise)	1	0.5
(10) Motels (low-rise)	1	0.5
(11) Apartments/condominiums (high-rise)	1	0.5
(12) Apartments/condominiums (low-rise)	9	4.8
(13) Single-family housing	5	2.7
Commercial developers	12	6.4
(14) High-rise office buildings	6	3.2
(15) Mid-rise office buildings	4	2.1
(16) Low-rise office buildings	0	0.0
(17) Shopping malls (enclosed)	2	1.1
(18) Strip shopping centers	0	0.0
Corporate/administrative/commercial	13	7.0
(19) General offices	8	4.3
(20) Retail stores	4	2.1
(21) Restaurants	1	0.5
Educational/institutional	53	28.3
(22) Classrooms	40	21.4
(23) Science/research labs	4	2.1
(24) Dormitories/housing	4	2.1
(25) Sports/athletic facilities	5	2.7

Notes: Percentages may not add to 100 percent because of rounding. Two-digit code refers to CMAA Survey project type.

Table 4.
Distribution of Valid Responses by Project Type (Continued)

Category and type	Number of projects	Percentage of total
Private religious/cultural	3	1.6
(26) Churches	3	1.6
(27) Theaters/auditoriums	0	0.0
State and local government	16	8.6
(28) Office buildings	7	3.7
(29) Museums/galleries	6	3.2
(30) Correctional facilities	3	1.6
Environmental Protection Agency	11	5.9
(31) Water treatment plants	2	1.1
(32) Wastewater treatment	3	1.6
(33) Hazardous waste facilities	3	1.6
(34) Water/sewer lines	3	1.6
Transportation departments	10	5.3
(35) Bridges	2	1.1
(36) Roads	5	2.7
(37) Tunnels	0	0.0
(38) Airports	3	1.6
Department of Defense	5	2.7
(39) Military housing	0	0.0
(40) Military offices	1	0.5
(41) Military training facilities	0	0.0
(42) Military medical facilities	0	0.0
(43) Piers/wharves	3	1.6
(44) Dredging	0	0.0
(45) Locks and dams	0	0.0
(46) Reservoirs	1	0.5
(47) Channel protection	0	0.0
(48) Beach stabilization	0	0.0
Other Federal	11	5.9
(49) Office buildings	10	5.3
(50) Postal facilities	1	0.5

Notes: Percentages may not add to 100 percent because of rounding. Two-digit code refers to CMAA Survey project type.

To generate valid statistics on the results, we aggregated the 49 types of projects into 16 construction categories. They were grouped by similarities in the type of CM performed for the various construction types within the general customer headings included in the survey. Otherwise, we would not have enough data points to generate valid statistics for each construction type. Table 5 shows how the various types of construction tasks were grouped into the construction categories for this purpose. In some cases, we found the number of projects in each category were insufficient to generate complete statistics. In those cases, we generated partial statistics. The project statistics for each construction category are summarized in Tables A-1 through A-16 in the appendix.

Table 5.
Grouping of Construction Project Types

Construction category	Project types	Construction category	Project types
I	(01) Hospitals	IX	(22) Classrooms
	(03) Clinics/outpatient facilities		(23) Science/research labs
	(04) Medical offices		
	(05) Extended care/nursing homes	X	(24) Dormitories/housing
			(25) Sports/athletic facilities
II	(06) Warehouse/distribution centers		
	(07) Light industrial	XI	(26) Churches
			(27) Theaters/auditoriums
III	(08) Process plants/heavy industrial		
		XII	(28) Office buildings
IV	(09) Hotels (high-rise)		(29) Museums/galleries
	(10) Motels (low-rise)		(30) Correctional facilities
	(11) Apartments/condominiums (high-rise)		
	(12) Apartments/condominiums (low-rise)	XIII	(31) Water treatment plants
	(13) Single-family housing		(32) Wastewater treatment
			(33) Hazardous waste facilities
V	(14) High-rise office buildings		(34) Water/sewer lines
	(15) Mid-rise office buildings		
	(16) Low-rise office buildings	XIV	(35) Bridges
			(36) Roads
VI	(17) Shopping malls (enclosed)		(37) Tunnels
	(18) Strip shopping		(38) Airports
VII	(19) General offices	XV	(40) Military offices
			(43) Piers/wharves
VIII	(20) Retail stores		
	(21) Restaurants	XVI	(49) Office buildings
			(50) Postal facilities

Table 6 summarizes CM fees for all projects by size of company, type of company, and client base. This analysis of size shows that there is no trend in the CM fee based on the company size. This table also indicates that the base CM fees have not changed significantly from those reported in the previous survey and that the "overall" responses are fairly indicative of each subcategory. Although fees did not change significantly overall, the reader is referred to the appendix, where deviations from the previous survey can be observed for each construction category.

Table 6.
Summary of Construction Management Fee (As Percent of Construction Contract)

	CM fee			Number of projects	Number of companies
	25th	Median	75th		
Overall	3.5%	5.0%	7.1%	187	33[a]
Size of company (number of employees)					
1 – 5	2.4	5.0	6.6	21	4
6 – 10	4.5	5.9	10.5	29	5
11 – 15	4.6	6.0	8.1	17	5
16 – 25	4.0	4.8	5.5	24	4
26 – 50	3.6	4.9	7.5	33	6
51 – 100	4.6	5.4	9.6	12	2
101 – 150	2.6	6.8	10.3	6	1
251 – 500	4.2	5.7	9.1	16	2
Over 500	1.2	2.5	6.0	29	4
Type of company					
CM firm	3.7	5.0	7.2	108	20
GC/CM firm	4.5	5.1	8.6	30	5
AE/CM firm	2.2	4.5	6.7	49	8
Client base					
Government	2.8	4.6	6.1	92	17
Private sector	3.6	5.0	8.3	42	9
Mixed	3.8	5.7	9.9	53	7

[a] Two companies did not provide fee information.

Table 7 summarizes the CM services provided during each project by this year's participants for all projects. In addition, the table shows the relative weight associated with each phase of CM as it relates to the total cost of the CM contract. The results indicate the level of services provided during the CM projects has increased from that provided during the previous survey. Since the level of service is a major determinant of the total CM cost, the higher level of services would account for the fact that the CM fee determined by this year's survey was slightly higher than that calculated from the 1989 survey.

Table 7.
Level and Relative Cost of CM Project Services

CM services	Service results (%)		Relative phase cost (%)	
	1993	1989	1993	1989
Predesign phase			6.5	3.6
Project management	56	46		
Scheduling	63	43		
Cost management	59	42		
Contract/project administration	56	40		
Design and bid phase			13.7	9.4
Project management	69	64		
Scheduling	74	64		
Cost estimating	72	42		
Constructibility review	64	29		
Quality assurance	47			
Contract/project administration	66	69		
Construction phase			81.7	77.8
Project management	90	88		
Scheduling	89	85		
Cost management	91	86		
Quality assurance	84	70		
Contract/project administration	93	93		
Additional services			2.9	9.3
Procurement of materials	17	27		
Value engineering	40	31		
Materials testing	14	17		
Claims analysis	14	17		
Other	2	10		

APPENDIX

Project Statistics Summaries

This appendix provides the following information for each of the 16 construction categories listed in Table 5 of the main text:

- *Construction management (CM) fee as a percentage of construction cost.* The CM fee is presented as a percentage of the value of the construction contract. This is done to establish a basis for comparing the fees over varying types of construction and conditions. For instance, for each construction type category, the CM fee is given for the following elements:
  - All projects
  - CM as owner's agent contracts
  - CM provides guaranteed maximum price contracts
  - Renovation projects
  - New construction projects.

For each of these conditions, we present the 25th percentile, median, 75th percentile, and the number of individual projects analyzed. We also give the number of different companies providing the project information, so that the reader can see whether the information provided is unique to a single company or whether the data are representative of several different companies. The CM fee ranges indicate what industry members are charging for services provided and can be used as the starting point for determining an appropriate CM fee for the various types of construction and conditions. In the tables, N/A indicates that too few data points were available to calculate the 25th and 75th percentile statistics.

- *Construction and CM contract value.* We show the average value of the construction and CM contracts used in the CM fee analysis.

- *Basis for estimating CM contract value.* We show the methods used by the participants of the survey to determine the fee: percentage of construction contract value, direct and indirect cost calculation, or other.

- *Summary of CM services.* We also show which CM services are provided for the reported projects. The types of services are defined in the Construction Management Association of America *Standard CM Services and Practice* manual. This list is intended to show the likelihood of the various types of services for each of the construction categories and in no way attempts to define a

cost associated with each service provided. However, when analyzing the CM fee data in the first part of each table, the reader should recognize that the fees may be affected by the services provided. Relative weights for each phase that can help determine the relative costs for a particular service are provided in the table.

The reader can use the information in this section to determine what CM services industry members are providing for their contracts and where their own services may be deficient. Each project included in the statistical summary had unique conditions. The data in these tables should be used only as a starting point for determining appropriate CM fees, not a final answer.

Table A-1.

Category I: Health Care Providers – (01) Hospitals, (03) Clinics/Outpatient Facilities, (04) Medical Offices, (05) Extended Care/Nursing Homes

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	3.1	5.3	8.2	19	12
CM as owner's agent	2.9	5.0	8.0	14	8
CM provides guaranteed maximum price	N/A	8.0	N/A	5	4
Renovation	N/A	4.5	N/A	4	4
New construction	3.1	5.3	8.3	15	8

Average value of construction contract	$8,447,368
Average value of CM contract	$261,494
Basis for estimating CM contract value	
Percentage of construction contract value	21%
Direct and indirect cost calculation	79%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		8.5
Project management	72	
Scheduling	72	
Cost management	78	
Contract/project administration	72	
Design and bid phase		12.9
Project management	83	
Scheduling	83	
Cost estimating	78	
Constructibility review	67	
Quality assurance	72	
Contract/project administration	78	
Construction phase		72.5
Project management	100	
Scheduling	100	
Cost management	100	
Quality assurance	94	
Contract/project administration	94	
Additional services		6.3
Procurement of materials	50	
Value engineering	39	
Materials testing	11	
Claims analysis	11	
Other	6	

Table A-2.
Category II: Corporate/Industrial — (06) Warehouse/Distribution Centers, (07) Light Industrial

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	4.1	6.3	9.5	7	5
CM as owner's agent	5.2	6.6	9.9	4	3
CM provides guaranteed maximum price	N/A	5.6	N/A	3	3
Renovation	N/A	4.0	N/A	1	1
New construction	4.9	6.6	10.6	6	5

Average value of construction contract	$3,075,714
Average value of CM contract	$183,297
Basis for estimating CM contract value	
Percent of construction contract value	57%
Direct and indirect cost calculation	43%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		4.0
Project management	43	
Scheduling	86	
Cost management	86	
Contract/project administration	43	
Design and bid phase		9.9
Project management	86	
Scheduling	86	
Cost estimating	100	
Constructibility review	71	
Quality assurance	57	
Contract/project administration	71	
Construction phase		84.0
Project management	60	
Scheduling	100	
Cost management	100	
Quality assurance	80	
Contract/project administration	80	
Additional services		2.1
Procurement of materials	27	
Value engineering	36	
Materials testing	0	
Claims analysis	0	
Other	0	

Table A-3.
Category III: Corporate/Industrial – (08) Process Plants/Heavy Industrial

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	3.6	6.0	12.2	10	5
CM as owner's agent	3.4	6.0	10.4	9	4
CM provides guaranteed maximum price	N/A	6.0	N/A	1	1
Renovation	N/A	5.0	N/A	2	1
New construction	4.6	6.3	10.2	8	4

Average value of construction contract	$106,760,000
Average value of CM contract	$3,931,600
Basis for estimating CM contract value	
Percentage of construction contract value	10%
Direct and indirect cost calculation	90%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		7.0
Project management	70	
Scheduling	70	
Cost management	70	
Contract/project administration	70	
Design and bid phase		17.2
Project management	70	
Scheduling	70	
Cost estimating	70	
Constructibility review	60	
Quality assurance	40	
Contract/project administration	80	
Construction phase		73.2
Project management	90	
Scheduling	100	
Cost management	90	
Quality assurance	90	
Contract/project administration	90	
Additional services		2.6
Procurement of materials	30	
Value engineering	20	
Materials testing	20	
Claims analysis	10	
Other	0	

Table A-4.

Category IV: Housing/Lodging — (09) Hotels (High-Rise), (10) Motels (Low-Rise), (11) Apartments/Condominiums (High-Rise), (12) Apartments/Condominiums (Low-Rise), (13) Single-Family Housing

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	2.0	4.5	5.9	17	10
CM as owner's agent	1.2	3.8	5.9	13	7
CM provides guaranteed maximum price	N/A	5.4	N/A	4	3
Renovation	0.9	3.8	7.7	7	4
New construction	3.0	4.8	5.9	10	7

Average value of construction contract	$7,733,000
Average value of CM contract	$204,362
Basis for estimating CM contract value	
Percentage of construction contract value	13%
Direct and indirect cost calculation	87%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		12.5
Project management	82	
Scheduling	82	
Cost management	76	
Contract/project administration	76	
Design and bid phase		15.6
Project management	76	
Scheduling	82	
Cost estimating	76	
Constructibility review	53	
Quality assurance	71	
Contract/project administration	76	
Construction phase		66.9
Project management	100	
Scheduling	100	
Cost management	100	
Quality assurance	88	
Contract/project administration	100	
Additional services		4.4
Procurement of materials	18	
Value engineering	47	
Materials testing	12	
Claims analysis	12	
Other	0	

Table A-5.

Category V: Commercial Developers — (14) High-Rise Office Buildings, (15) Mid-Rise Office Buildings, (16) Low-Rise Office Buildings

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	3.5	5.6	10.0	10	5
CM as owner's agent	3.5	5.6	10.0	10	5
CM provides guaranteed maximum price	N/A	N/A	N/A	0	0
Renovation	4.0	6.7	10.0	9	2
New construction	N/A	0.8	N/A	1	1

Average value of construction contract $7,426,000
Average value of CM contract $423,500

Basis for estimating CM contract value
- Percentage of construction contract value 75%
- Direct and indirect cost calculation 25%
- Other 0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		6.2
Project management	80	
Scheduling	80	
Cost management	80	
Contract/project administration	80	
Design and bid phase		16.0
Project management	100	
Scheduling	100	
Cost estimating	100	
Constructibility review	90	
Quality assurance	70	
Contract/project administration	100	
Construction phase		69.0
Project management	90	
Scheduling	100	
Cost management	100	
Quality assurance	100	
Contract/project administration	100	
Additional services		8.3
Procurement of materials	40	
Value engineering	60	
Materials testing	50	
Claims analysis	60	
Other	0	

Table A-6.
Category VI: Commercial Developers — (17) Shopping Malls (Enclosed), (18) Strip Shopping Centers

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	N/A	3.9	N/A	2	2
CM as owner's agent	N/A	7.5	N/A	1	1
CM provides guaranteed maximum price	N/A	0.2	N/A	1	1
Renovation	N/A	7.5	N/A	1	1
New construction	N/A	0.2	N/A	1	1

Average value of construction contract $12,650,000
Average value of CM contract $41,250

Basis for estimating CM contract value
- Percentage of construction contract value 100%
- Direct and indirect cost calculation 0%
- Other 0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		2.5
Project management	0	
Scheduling	0	
Cost management	100	
Contract/project administration	100	
Design and bid phase		4.0
Project management	0	
Scheduling	100	
Cost estimating	100	
Constructibility review	100	
Quality assurance	0	
Contract/project administration	100	
Construction phase		91.0
Project management	100	
Scheduling	100	
Cost management	100	
Quality assurance	100	
Contract/project administration	100	
Additional services		2.5
Procurement of materials	100	
Value engineering	100	
Materials testing	0	
Claims analysis	0	
Other	0	

Table A-7.
Category VII: Corporate/Administrative/Commercial — (19) General Offices

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	3.6	6.1	9.1	8	7
CM as owner's agent	3.7	7.3	11.6	4	4
CM provides guaranteed maximum price	2.4	6.0	7.8	4	4
Renovation	0.6	4.8	11.7	5	5
New construction	N/A	7.1	N/A	3	3

Average value of construction contract $2,761,564
Average value of CM contract $254,286

Basis for estimating CM contract value
- Percentage of construction contract value 33%
- Direct and indirect cost calculation 67%
- Other 0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		4.1
Project management	80	
Scheduling	80	
Cost management	80	
Contract/project administration	80	
Design and bid phase		9.4
Project management	80	
Scheduling	100	
Cost estimating	80	
Constructibility review	60	
Quality assurance	40	
Contract/project administration	60	
Construction phase		77.1
Project management	100	
Scheduling	100	
Cost management	100	
Quality assurance	80	
Contract/project administration	100	
Additional services		9.3
Procurement of materials	20	
Value engineering	20	
Materials testing	0	
Claims analysis	20	
Other	0	

Table A-8.
Category VIII: Corporate/Administrative/Commercial — (20) Retail Stores, (21) Restaurants

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	1.6	5.9	11.3	5	4
CM as owner's agent	1.6	5.9	11.5	5	4
CM provides guaranteed maximum price	N/A	N/A	N/A	0	0
Renovation	N/A	0.4	N/A	1	1
New construction	5.3	6.1	11.3	4	3

Average value of construction contract	$1,850,600
Average value of CM contract	$41,300
Basis for estimating CM contract value	
Percentage of construction contract value	0%
Direct and indirect cost calculation	100%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		14.0
Project management	80	
Scheduling	100	
Cost management	100	
Contract/Project administration	80	
Design and bid phase		24.0
Project management	100	
Scheduling	100	
Cost estimating	60	
Constructibility review	40	
Quality assurance	100	
Contract/project administration	80	
Construction phase		60.0
Project management	100	
Scheduling	100	
Cost management	100	
Quality assurance	100	
Contract/project administration	100	
Additional services		2.0
Procurement of materials	0	
Value engineering	60	
Materials testing	0	
Claims analysis	20	
Other	0	

Table A-9.
Category IX: Educational/Institutional — (22) Classrooms, (23) Science/Research Labs

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	2.9	4.2	5.9	44	14
CM as owner's agent	2.5	4.1	5.0	37	13
CM provides guaranteed maximum price	7.0	9.2	11.8	7	2
Renovation	4.3	6.7	9.0	12	6
New construction	2.9	4.2	5.0	32	8

Average value of construction contract	$15,595,159
Average value of CM contract	$578,958
Basis for estimating CM contract value	
Percentage of construction contract value	18%
Direct and indirect cost calculation	82%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		7.0
Project management	59	
Scheduling	64	
Cost management	64	
Contract/project administration	50	
Design and bid phase		16.5
Project management	77	
Scheduling	86	
Cost estimating	86	
Constructibility review	68	
Quality assurance	45	
Contract/project administration	73	
Construction phase		75.8
Project management	84	
Scheduling	86	
Cost management	89	
Quality assurance	66	
Contract/project administration	89	
Additional services		0.8
Procurement of materials	0	
Value engineering	34	
Materials testing	14	
Claims analysis	2	
Other	0	

Table A-10.
Category X: Educational/Institutional – (24) Dormitories/Housing, (25) Sports/Athletic Facilities

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	3.3	4.9	5.0	9	7
CM as owner's agent	1.3	4.3	9.2	5	5
CM provides guaranteed maximum price	3.5	5.0	5.0	4	2
Renovation	N/A	5.0	N/A	3	3
New construction	3.6	4.6	5.0	6	5

Average value of construction contract	$9,100,000
Average value of CM contract	$348,667
Basis for estimating CM contract value	
Percentage of construction contract value	33%
Direct and indirect cost calculation	56%
Other	11%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		7.8
Project management	78	
Scheduling	78	
Cost management	78	
Contract/project administration	78	
Design and bid phase		14.1
Project management	78	
Scheduling	78	
Cost estimating	67	
Constructibility review	56	
Quality assurance	44	
Contract/project administration	56	
Construction phase		68.7
Project management	100	
Scheduling	100	
Cost management	89	
Quality assurance	78	
Contract/project administration	89	
Additional services		9.4
Procurement of materials	44	
Value engineering	67	
Materials testing	11	
Claims analysis	11	
Other	0	

Table A-11.
Category XI: Private Religious/Cultural – (26) Churches, (27) Theaters/Auditoriums

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	N/A	2.6	N/A	3	3
CM as owner's agent	N/A	2.6	N/A	3	3
CM provides guaranteed maximum price	N/A	N/A	N/A	0	0
Renovation	N/A	N/A	N/A	0	0
New construction	N/A	2.6	N/A	3	3

Average value of construction contract	$5,883,333
Average value of CM contract	$151,333
Basis for estimating CM contract value	
Percentage of construction contract value	33%
Direct and indirect cost calculation	67%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		12.7
Project management	100	
Scheduling	100	
Cost management	100	
Contract/project administration	67	
Design and bid phase		23.3
Project management	67	
Scheduling	67	
Cost estimating	67	
Constructibility review	33	
Quality assurance	67	
Contract/project administration	67	
Construction phase		63.0
Project management	67	
Scheduling	67	
Cost management	67	
Quality assurance	100	
Contract/project administration	67	
Additional		1.0
Procurement of materials	33	
Value engineering	100	
Materials testing	0	
Claims analysis	0	
Other	0	

Table A-12.
Category XII: State and Local Government — (28) Office Buildings, (29) Museums/Galleries, (30) Correctional Facilities

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	3.1	4.0	6.4	16	11
CM as owner's agent	3.0	5.0	7.1	15	11
CM provides guaranteed maximum price	N/A	4.0	N/A	1	1
Renovation	3.1	4.8	7.3	8	7
New construction	3.5	4.5	5.7	8	7

Average value of construction contract	$13,243,938
Average value of CM contract	$388,381
Basis for estimating CM contract value	
Percentage of construction contract value	12%
Direct and indirect cost calculation	88%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		5.7
Project management	57	
Scheduling	57	
Cost management	57	
Contract/project administration	50	
Design and bid phase		15.5
Project management	64	
Scheduling	79	
Cost estimating	79	
Constructibility review	64	
Quality assurance	29	
Contract/project administration	50	
Construction phase		76.8
Project management	86	
Scheduling	93	
Cost management	93	
Quality assurance	100	
Contract/project administration	93	
Additional services		5.0
Procurement of materials	0	
Value engineering	64	
Materials testing	7	
Claims analysis	14	
Other	0	

Table A-13.

Category XIII: Environmental Protection Agency — (31) Water Treatment Plants, (32) Wastewater Treatment, (33) Hazardous Waste Facilities, (34) Water/Sewer Lines

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	5.0	9.4	13.5	11	5
CM as owner's agent	5.0	9.4	13.5	11	5
CM provides guaranteed maximum price	N/A	N/A	N/A	0	0
Renovation	5.7	7.9	11.3	4	3
New construction	4.4	10.0	24.0	7	5

Average value of construction contract	$21,634,455
Average value of CM contract	$1,488,364

Basis for estimating CM contract value	
Percentage of construction contract value	0%
Direct and indirect cost calculation	100%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		1.2
Project management	18	
Scheduling	18	
Cost management	9	
Contract/project administration	18	
Design and bid phase		7.8
Project management	18	
Scheduling	27	
Cost estimating	45	
Constructibility review	36	
Quality assurance	27	
Contract/project administration	27	
Construction phase		90.0
Project management	100	
Scheduling	82	
Cost management	82	
Quality assurance	91	
Contract/project administration	100	
Additional services		1.3
Procurement of materials	9	
Value engineering	18	
Materials testing	27	
Claims analysis	9	
Other	0	

Table A-14.
Category XIV: Transportation Departments — (35) Bridges, (36) Roads, (37) Tunnels, (38) Airports

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	3.5	5.3	7.4	10	5
CM as owner's agent	3.5	5.3	7.4	10	5
CM provides guaranteed maximum price	N/A	N/A	N/A	0	0
Renovation	N/A	6.5	N/A	3	2
New construction	4.0	5.0	7.1	7	4

Average value of construction contract	$136,741,600
Average value of CM contract	$5,925,400
Basis for estimating CM contract value	
Percentage of construction contract value	0%
Direct and indirect cost calculation	100%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		1.0
Project management	10	
Scheduling	10	
Cost management	10	
Contract/project administration	10	
Design and bid phase		5.5
Project management	60	
Scheduling	40	
Cost estimating	20	
Constructibility review	50	
Quality assurance	10	
Contract/project administration	50	
Construction phase		90.1
Project management	90	
Scheduling	90	
Cost management	80	
Quality assurance	80	
Contract/project administration	100	
Additional services		3.4
Procurement of materials	0	
Value engineering	20	
Materials testing	0	
Claims analysis	50	
Other	20	

Table A-15.
Category XV: Department of Defense — (40) Military Offices, (43) Piers/Wharves

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	4.2	4.6	5.8	4	2
CM as owner's agent	4.2	4.6	5.8	4	2
CM provides guaranteed maximum price	N/A	N/A	N/A	0	0
Renovation	N/A	7.0	N/A	1	1
New construction	N/A	4.6	N/A	3	2

Average value of construction contract	$38,050,000
Average value of CM contract	$1,753,305
Basis for estimating CM contract value	
Percentage of construction contract value	0%
Direct and indirect cost calculation	100%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		0
Project management	0	
Scheduling	0	
Cost management	0	
Contract/project administration	0	
Design and bid phase		3.4
Project management	0	
Scheduling	0	
Cost estimating	25	
Constructibility review	75	
Quality assurance	75	
Contract/project administration	75	
Construction phase		96.9
Project management	100	
Scheduling	100	
Cost management	100	
Quality assurance	100	
Contract/project administration	100	
Additional services		2.5
Procurement of materials	0	
Value engineering	75	
Materials testing	0	
Claims analysis	0	
Other	0	

Table A-16.
Category XVI: Other Federal — (49) Office Buildings, (50) Postal Facilities

Construction Management Fee As Percentage of Construction Cost

	CM fee			Number of projects	Number of companies
	25%	Median	75%		
Overall fee	2.8	5.6	7.7	11	3
CM as owner's agent	2.8	5.6	7.7	11	3
CM provides guaranteed maximum price	N/A	N/A	N/A	0	0
Renovation	2.6	5.6	8.0	10	3
New construction	N/A	3.5	N/A	1	1

Average value of construction contract	$66,836,364
Average value of CM contract	$1,703,545
Basis for estimating CM contract value	
Percentage of construction contract value	9%
Direct and indirect cost calculation	91%
Other	0%

Services provided	Service frequency (%)	Relative phase cost (%)
Predesign phase		1.5
Project management	9	
Scheduling	64	
Cost management	9	
Contract/project administration	64	
Design and bid phase		7.0
Project management	45	
Scheduling	45	
Cost estimating	45	
Constructibility review	91	
Quality assurance	9	
Contract/project administration	27	
Construction phase		91.9
Project management	91	
Scheduling	45	
Cost management	91	
Quality assurance	100	
Contract/project administration	100	
Additional services		0.3
Procurement of materials	9	
Value engineering	9	
Materials testing	9	
Claims analysis	9	
Other	0	

REPORT DOCUMENTATION PAGE

Form Approved
OPM No.0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources gathering, and maintaining the data needed, and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

1. AGENCY USE ONLY *(Leave Blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	March 1994	Final

4. TITLE AND SUBTITLE

A Survey of Construction Management Costs in 1993

5. FUNDING NUMBERS

C DACW31-90-D-0076

PE 0902198D

6. AUTHOR(S)

Jordan W. Cassell
Jeffrey A. Hawkins

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Logistics Management Institute
6400 Goldsboro Road
Bethesda, MD 20817-5886

8. PERFORMING ORGANIZATION REPORT NUMBER

LMI– CE309RD1

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

U.S. Army Corps of Engineers
20 Massachusetts Avenue, N.W.
Washington, D.C. 20314-1000

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

A: Approved for public release; distribution unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

This report presents the results of the third construction management cost survey conducted by the Logistics Management Institute in cooperation with the Construction Management Association of America.

14. SUBJECT TERMS

Construction, construction management, construction costs, construction management fees

15. NUMBER OF PAGES

33

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL